

What is claimed is:

1. A water-soluble or water-dispersible hotmelt adhesive comprising:
 - A) 20 to 80% by weight of at least one component (A),
 - B) 0 to 70% by weight of at least one polymer selected from the group consisting of polyesters, polyurethanes, alkyl poly(meth)acrylates, acrylic acid homopolymers, acrylic acid copolymers and vinyl polymers as component (B),
 - C) 10 to 70% by weight of at least one resin as component (C),
 - D) 0 to 30% by weight of at least one plasticizer as component (D),
 - E) 0 to 3% by weight of at least one additive as component (E), the sum total of components (A) to (E) being 100% by weight and component (A) being a graft copolymer containing:
 - i) 30 to 90% by weight olefinically unsaturated monomer, wherein said olefinically unsaturated monomer corresponds to either
 - (i-a) at least one olefinically unsaturated monomer selected from the group consisting of
 - a) mono- and di-esters of crotonic acid, cinnamic acid, fumaric acid, maleic acid, citraconic acid, and itaconic acid;
 - b) carboxyfunctional monomers;
 - c) N-vinyl caprolactam, vinyl phosphonates, N-vinyl formamides, N-vinyl acetamides, hydroxypropyl acrylates and methacrylates, monoacrylates and monomethacrylates of polyalkylene glycols, acrylates, methacrylates, acrylic acid and methacrylic acid amides containing amine groups;
 - d) vinyl esters corresponding to general formula (I)

$$(I) \quad CH_2=CH-O-C(O)-R_1, \text{ with } R_1 = C_{11-21},$$
 the at least one olefinically unsaturated monomer of group (a), (b), (c) or (d) being

present in the graft copolymer in a quantity of up to 50% by weight; or

(i-b) a mixture of olefinically unsaturated monomers of vinyl acetate and, based on the graft copolymer, up to 50% by weight of at least one olefinically unsaturated monomer selected from the group consisting of stearyl acrylate, vinyl laurate, vinyl versatate, lauryl acrylate, lauryl methacrylate, dibutyl maleate, dibutyl itaconate, dibutyl fumarate and acrylates and methacrylates corresponding to general formula (II):

(II) $\text{CH}_2=\text{CR}_2-\text{C}(\text{O})-\text{O}-\text{R}_3$ with $\text{R}_2 = \text{H}$ or CH_3 and $\text{R}_3 = \text{C}_{12-22}$; or

(i-c) at least one monomer selected from the group consisting of vinyl acetate and vinyl propionate; and

ii) 10 to 70% by weight of polyalkylene oxide with a molecular weight of 400 to 50,000 g/mol, the ethylene oxide content of the polyalkylene oxide being at least 50% by weight;

wherein at least 1% by weight of component (B) is present if said olefinically unsaturated monomer corresponds to (i-c) but not to (i-a) or (i-b).

2. A hotmelt adhesive as claimed in claim 1, wherein the olefinically unsaturated monomer corresponds to group (i-a) and contains at least one olefinically unsaturated monomer selected from the group consisting of acrylates and methacrylates corresponding to general formula (II):

(II) $\text{CH}_2=\text{CR}_2-\text{C}(\text{O})-\text{O}-\text{R}_3$ with $\text{R}_2 = \text{H}$ or CH_3 and $\text{R}_3 = \text{C}_{12-22}$.

3. A hotmelt adhesive as claimed in claim 1, wherein the ethylene oxide content of the graft copolymer is at least 75% by weight.

4. A hotmelt adhesive as claimed in claim 1 having a Brookfield viscosity at 150°C of 200 mPa.s to 2,500 mPa.s, as measured by ASTM D 3236-88.
5. A hotmelt adhesive as claimed in claim 1, wherein the polyalkylene oxides are selected from the group consisting of homopolymers of ethylene oxide, block copolymers of ethylene oxide and propylene oxide, statistical copolymers of ethylene oxide and propylene oxide, ether-terminated homopolymers of ethylene oxide, ester-terminated homopolymers of ethylene oxide, ether-terminated block copolymers of ethylene oxide and propylene oxide, ester-terminated block copolymers of ethylene oxide and propylene oxide, ether-terminated statistical copolymers of ethylene oxide and propylene oxide, and ester-terminated statistical copolymers of ethylene oxide and propylene oxide.
6. A hotmelt adhesive as claimed in claim 1, wherein the polyalkylene oxide is a mixture of at least one high molecular weight polyalkylene oxide and at least one low molecular weight polyalkylene oxide, said mixture having a Brookfield melt viscosity of 100 mPa.s to 80,000 mPa.s at 100°C, as measured by ASTM D 3236-88.
7. A hotmelt adhesive as claimed in claim 1 wherein the graft copolymer is comprised of 60 to 80% by weight olefinically unsaturated monomer.
8. A hotmelt adhesive as claimed in claim 1, wherein component (B) is comprised of at least one of:
- B1) 10 to 50% by weight, based on the weight of the hotmelt adhesive, of at least one (meth)acrylic acid polymer;
 - B2) 5 to 30% by weight, based on the weight of the hotmelt adhesive, of at least one polyester;
 - B3) at least one alkyl poly(meth)acrylate, the alkyl group having a

chain length of 1 to 18 carbon atoms;

- B4) at least one polyvinyl alcohol with a molecular weight above 1,000 g/mol;
- B5) at least one polyvinyl alkylether containing 1 to 14 carbon atoms in the alkyl group; or
- B6) 5 to 30% by weight of at least one polyurethane.

9. A hotmelt adhesive as claimed in claim 1, wherein component (B) comprises a polyester based on aromatic dicarboxylic acids containing sulfo groups.

10. A hotmelt adhesive as claimed in claim 1, wherein component (C) comprises at least one resin selected from the group consisting of

- a) hydroabietyl alcohol and esters thereof;
- b) natural resins and modified natural resins;
- c) copolymers of styrene and maleic anhydride;
- d) acrylic acid copolymers;
- e) resins based on functional hydrocarbon resins; and
- f) alkyl esters of partly hydrogenated rosins.

11. A hotmelt adhesive as claimed in claim 1, comprising:

- A) 20 to 80% by weight of component (A);
- B) 5 to 20% by weight of at least one polyester as component (B2);
- C) 10 to 70% by weight of at least one acrylic acid copolymer as component (C);
- D) 5 to 25% by weight of at least one plasticizer based on polyalkylene glycol with a molecular weight of 200 to 6,000 g/mol as component (D);

the sum total of the components being 100% by weight.

12. A method of bonding a first substrate to a second substrate

comprising applying a hotmelt adhesive as claimed in claim 1 to at least one of the first substrate and the second substrate, fitting the first substrate and second substrate together, and cooling to set said hotmelt adhesive.

- 5 13. A method as claimed in claim 12 wherein at least one of the first substrate and second substrate is capable of being disintegrated in water or aqueous media.
14. A method as claimed in claim 12 wherein at least one of the first
10 substrate or second substrate is comprised of plastic.
15. A method as claimed in claim 12 wherein the first substrate is a label and the second substrate is a hollow container.
- 15 16. An article of manufacture comprising a hotmelt adhesive as claimed in claim 1 and a substrate.
17. An article of manufacture as claimed in claim 16, wherein said article of manufacture is selected from the group consisting of hollow
20 containers, books, boxes, and sanitary articles.
18. An article of manufacture as claimed in claim 16, wherein said substrate is comprised of plastic.
- 25 19. An article of manufacture as claimed in claim 16, comprising said hotmelt adhesive, a hollow container, and a label wherein said label is bonded to said hollow container using said hotmelt adhesive.